

N. Walnut St./N. Rehoboth Blvd./10th St. Intersection Study

Council Meeting

June 13, 2023

N. Walnut St./N. Rehoboth Blvd./10TH St. Intersection Study

Study Area



N. Walnut St./N. Rehoboth Blvd./10TH St. Intersection Study

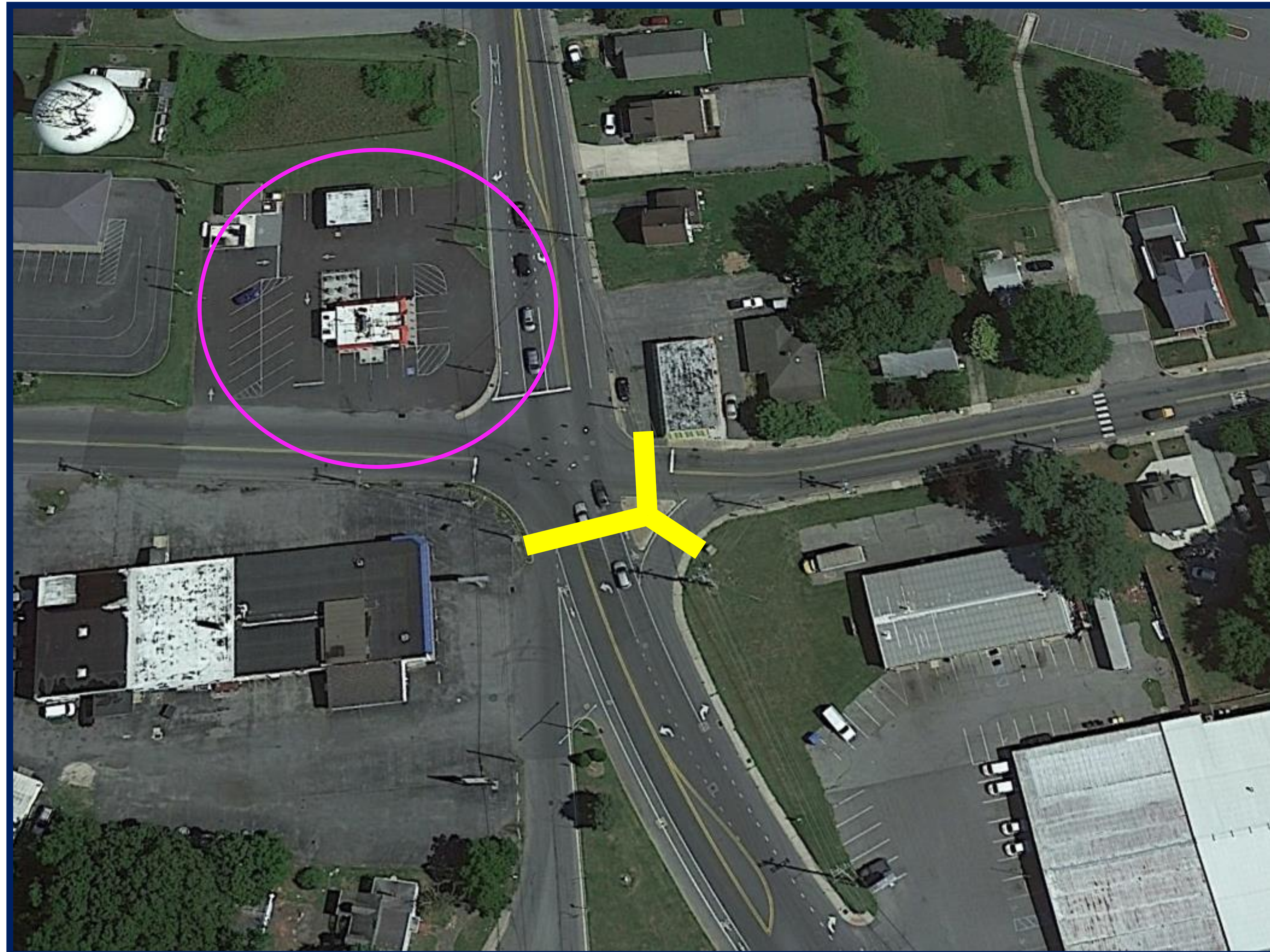
Project Goals

- Analyze connectivity between Milford Senior High School, Milford Central Academy, and residential communities to the south
- Evaluate intersection improvements and/or road reconfigurations to improve mobility for pedestrians, cyclists and motorists
- Implement elements from the Milford Bicycle Master Plan and the Milford Comprehensive Plan

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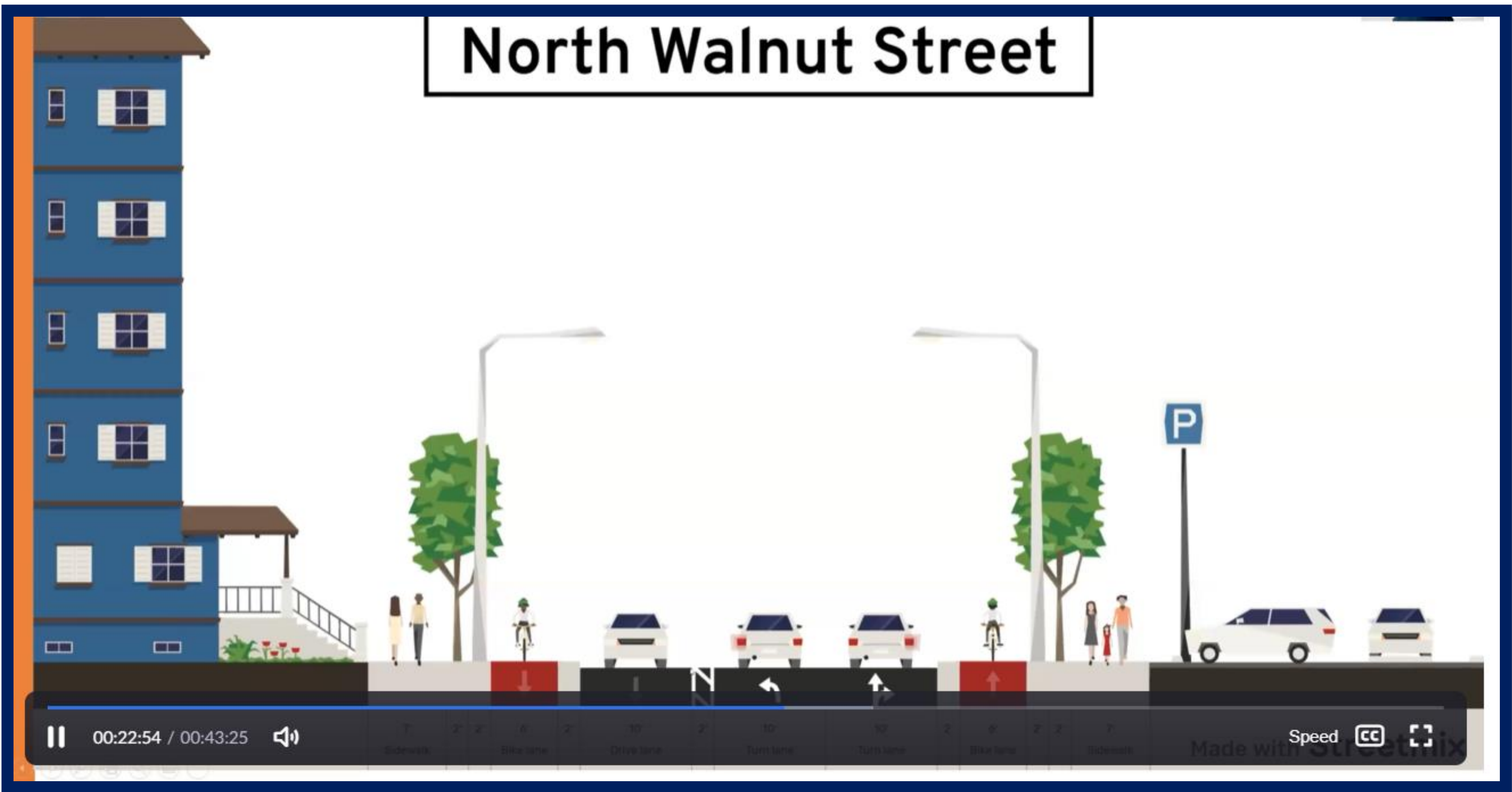
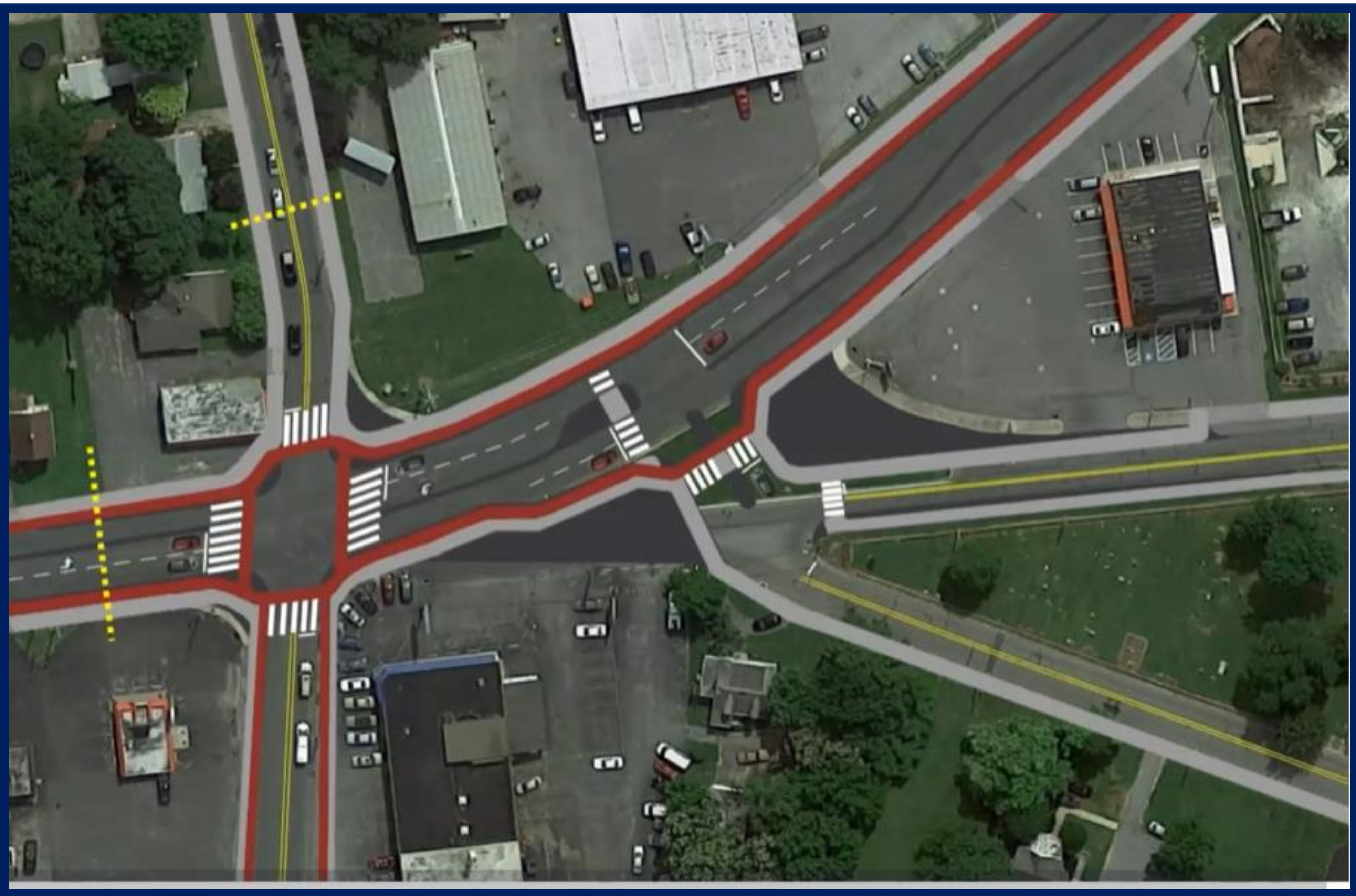
Milford Bicycle Master Plan Recommendations

- North/south crossing of 10th Street
- East/west crossing of N. Rehoboth Boulevard
- Avoid impacts to Dairy Queen property



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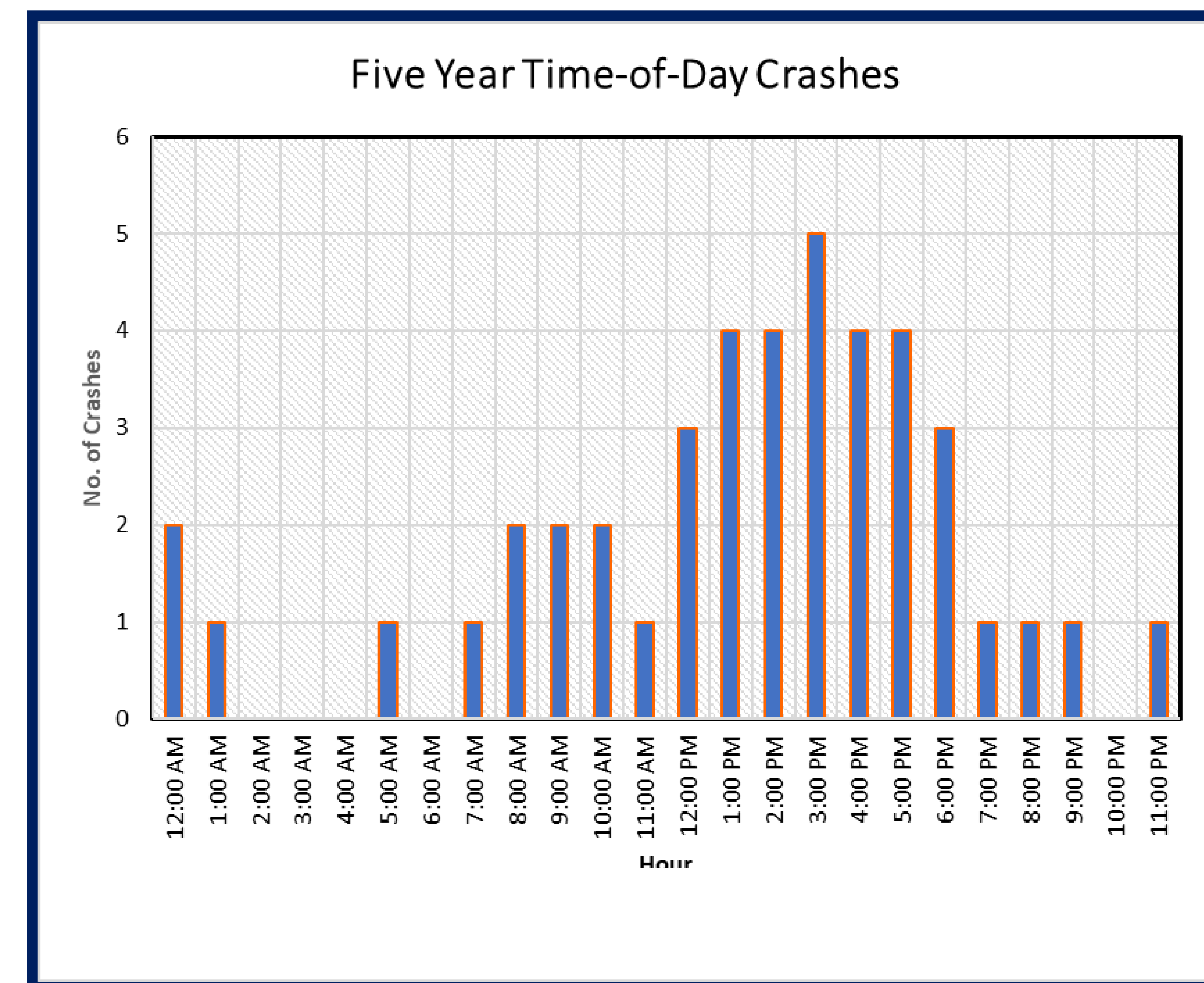
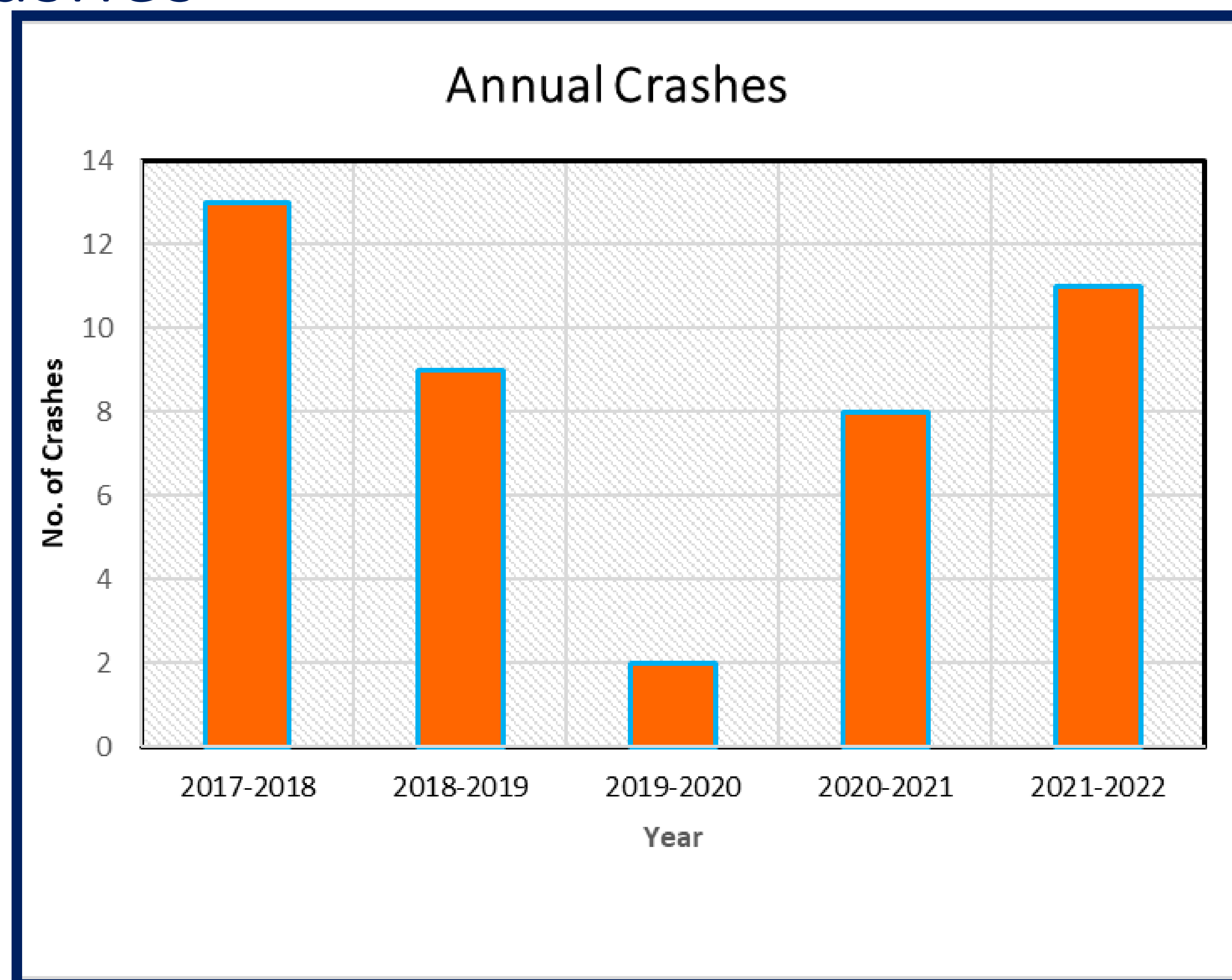
Studied as part of Bike Delaware’s
“Day with the Dutch”



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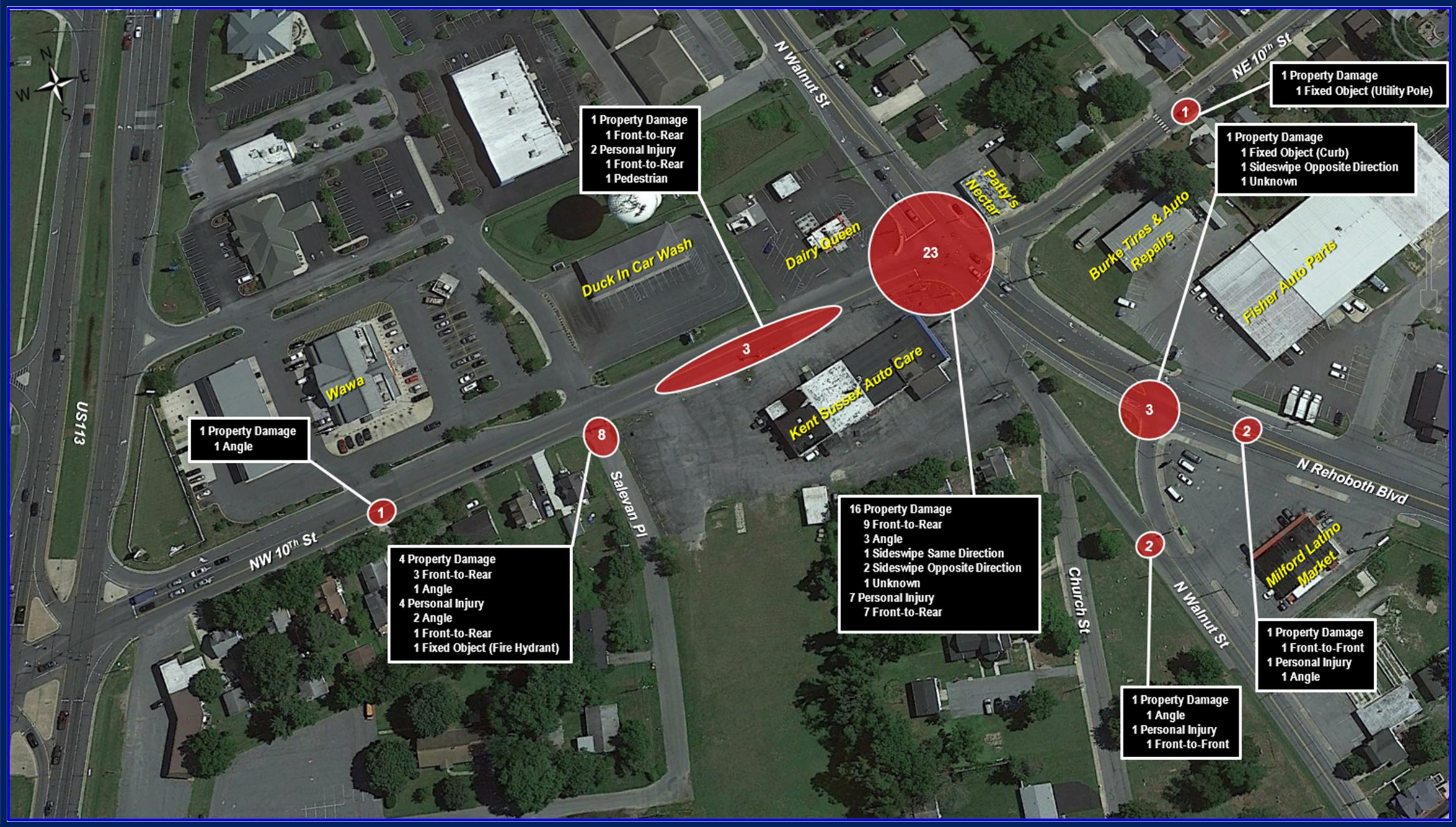
Existing Crash Data

- Crash data analyzed from November 10, 2017 through November 10, 2022
- Crash data study area 0.1-mile radius from intersection
- 43 crashes occurred / 23 crashes occurred at the intersection
- No fatal crashes



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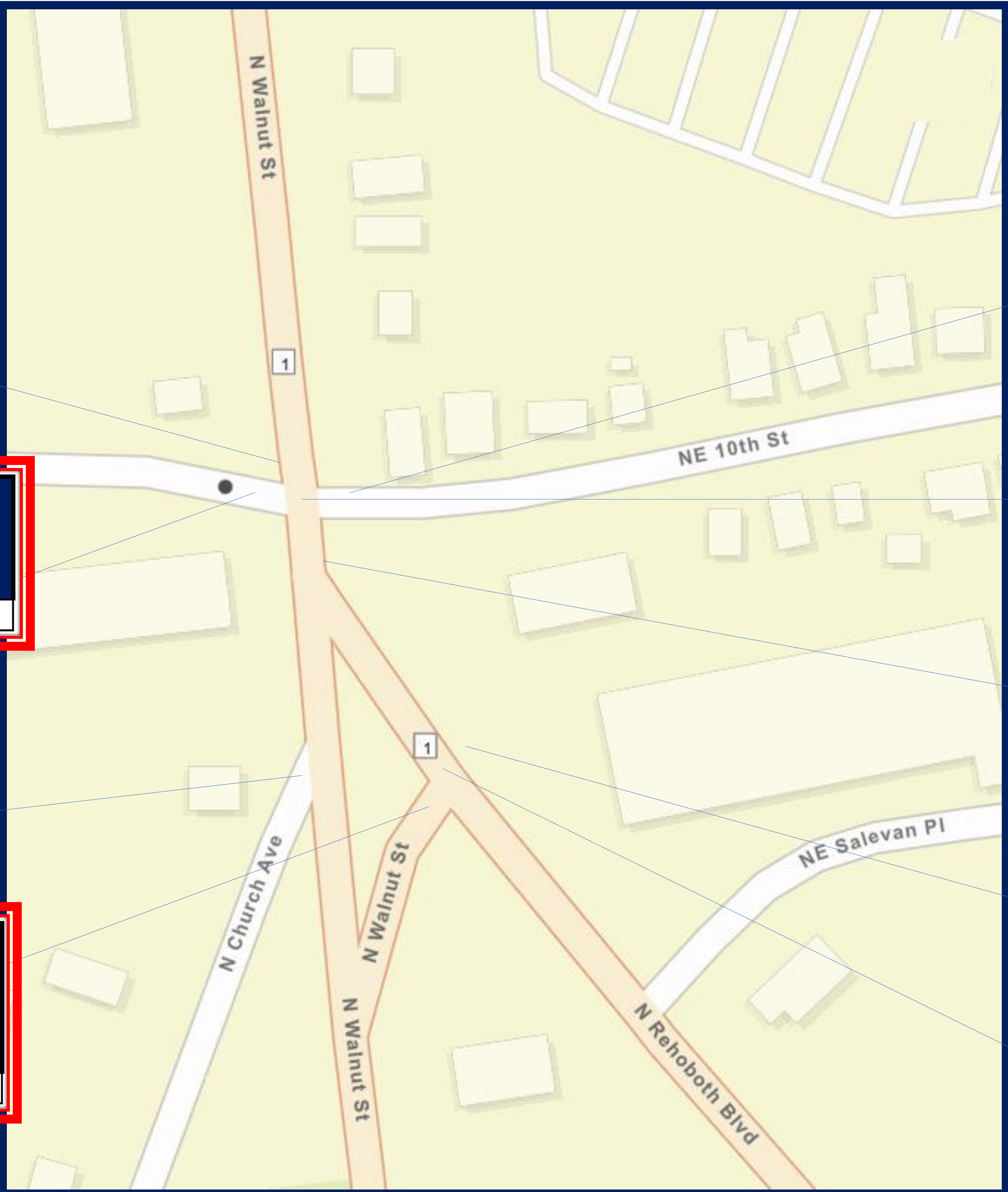
Existing Crash Data



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Level of Service Criteria		
LOS	Delay (Seconds per Vehicle)	
	Signalized	Unsignalized
A	0 to 10	0 to 10
B	>10 to 20	>10 to 15
C	>20 to 35	>15 to 25
D	>35 to 55	>25 to 35
E	>55 to 80	>35 to 50
F	>80	>50

Existing Levels of Service (LOS)



SB N. Walnut St 2022 Weekday AM Peak Hour		SB N. Walnut St 2022 Weekday Midday Peak Hour		SB N. Walnut St 2022 Weekday PM Peak Hour	
Delay	LOS	Delay	LOS	Delay	LOS
21.6	C	23.6	C	25.7	C

EB NW 10th Street 2022 Weekday AM Peak Hour		EB NW 10th Street 2022 Weekday Midday Peak Hour		EB NW 10th Street 2022 Weekday PM Peak Hour	
Delay	LOS	Delay	LOS	Delay	LOS
86.3	F	85.1	F	141.7	F

N. Walnut St @ Church St 2022 Weekday AM Peak Hour		N. Walnut St @ Church St 2022 Weekday Midday Peak Hour		N. Walnut St @ Church St 2022 Weekday PM Peak Hour	
Delay	LOS	Delay	LOS	Delay	LOS
9.2	A	9.1	A	9.3	A

N. Walnut St @ N. Rehoboth Blvd 2022 Weekday AM Peak Hour		N. Walnut St @ N. Rehoboth Blvd 2022 Weekday Midday Peak Hour		N. Walnut St @ N. Rehoboth Blvd 2022 Weekday PM Peak Hour	
Delay	LOS	Delay	LOS	Delay	LOS
70.7	F	42.1	E	96.5	F

WB NE 10th St 2022 Weekday AM Peak Hour		WB NE 10th St 2022 Weekday Midday Peak Hour		WB NE 10th St 2022 Weekday PM Peak Hour	
Delay	LOS	Delay	LOS	Delay	LOS
24	C	23.6	C	48.3	D

Intersection 2022 Weekday AM Peak Hour		Intersection 2022 Weekday Midday Peak Hour		Intersection 2022 Weekday PM Peak Hour	
Delay	LOS	Delay	LOS	Delay	LOS
36.5	D	36.7	D	61.6	E

NB N. Rehoboth Blvd 2022 Weekday AM Peak Hour		NB N. Rehoboth Blvd 2022 Weekday Midday Peak Hour		NB N. Rehoboth Blvd 2022 Weekday PM Peak Hour	
Delay	LOS	Delay	LOS	Delay	LOS
12.6	B	13.6	B	40.7	D

N. Walnut St @ N. Rehoboth Blvd 2022 Weekday AM Peak Hour		N. Walnut St @ N. Rehoboth Blvd 2022 Weekday Midday Peak Hour		N. Walnut St @ N. Rehoboth Blvd 2022 Weekday PM Peak Hour	
Delay	LOS	Delay	LOS	Delay	LOS
12.2	B	15.3	C	14.1	B

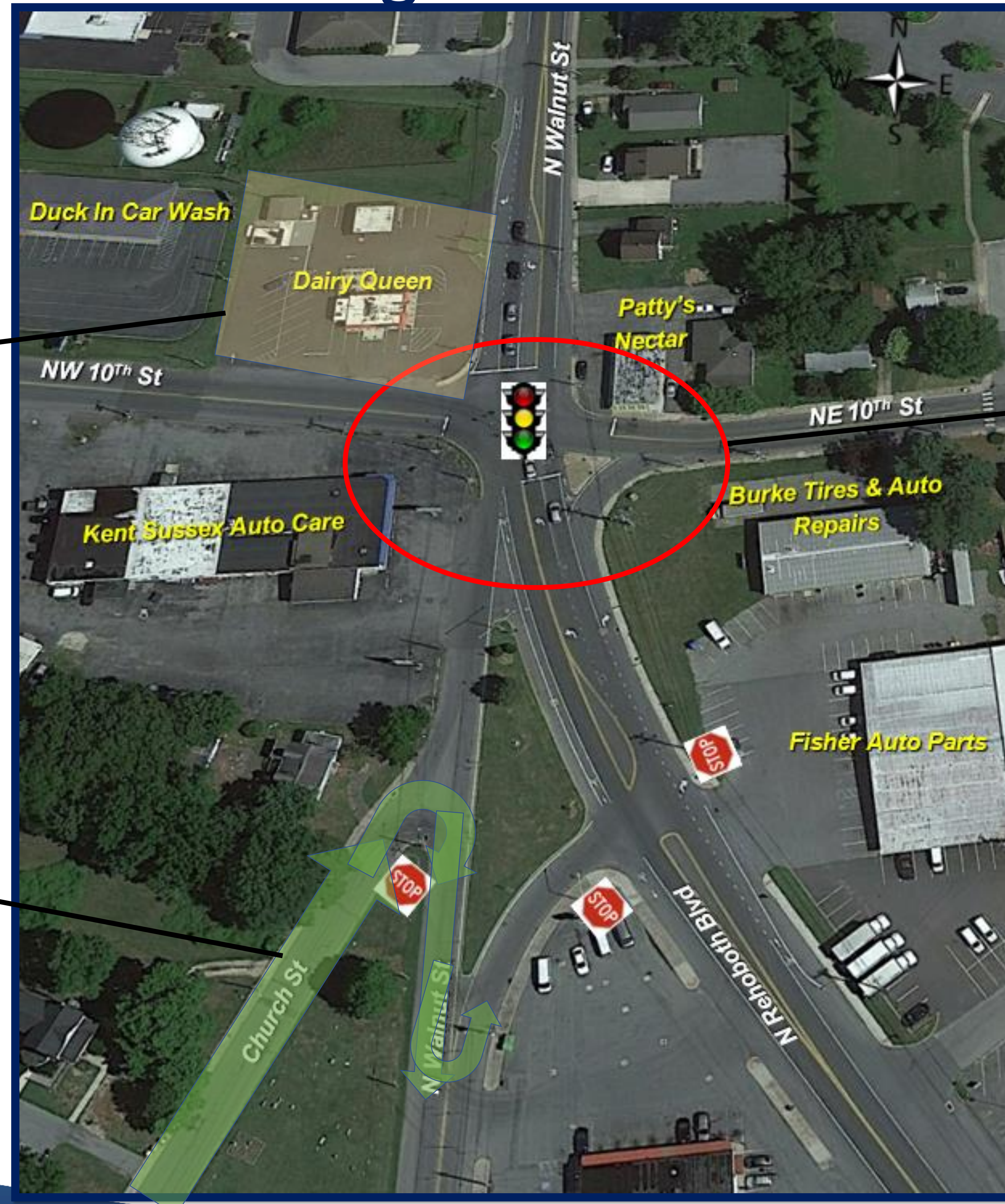
N. Walnut St @ N. Rehoboth Blvd 2022 Weekday AM Peak Hour		N. Walnut St @ N. Rehoboth Blvd 2022 Weekday Midday Peak Hour		N. Walnut St @ N. Rehoboth Blvd 2022 Weekday PM Peak Hour	
Delay	LOS	Delay	LOS	Delay	LOS
9.1	A	8.3	A	8.7	A

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Existing Intersection

- Avoid Dairy Queen Property

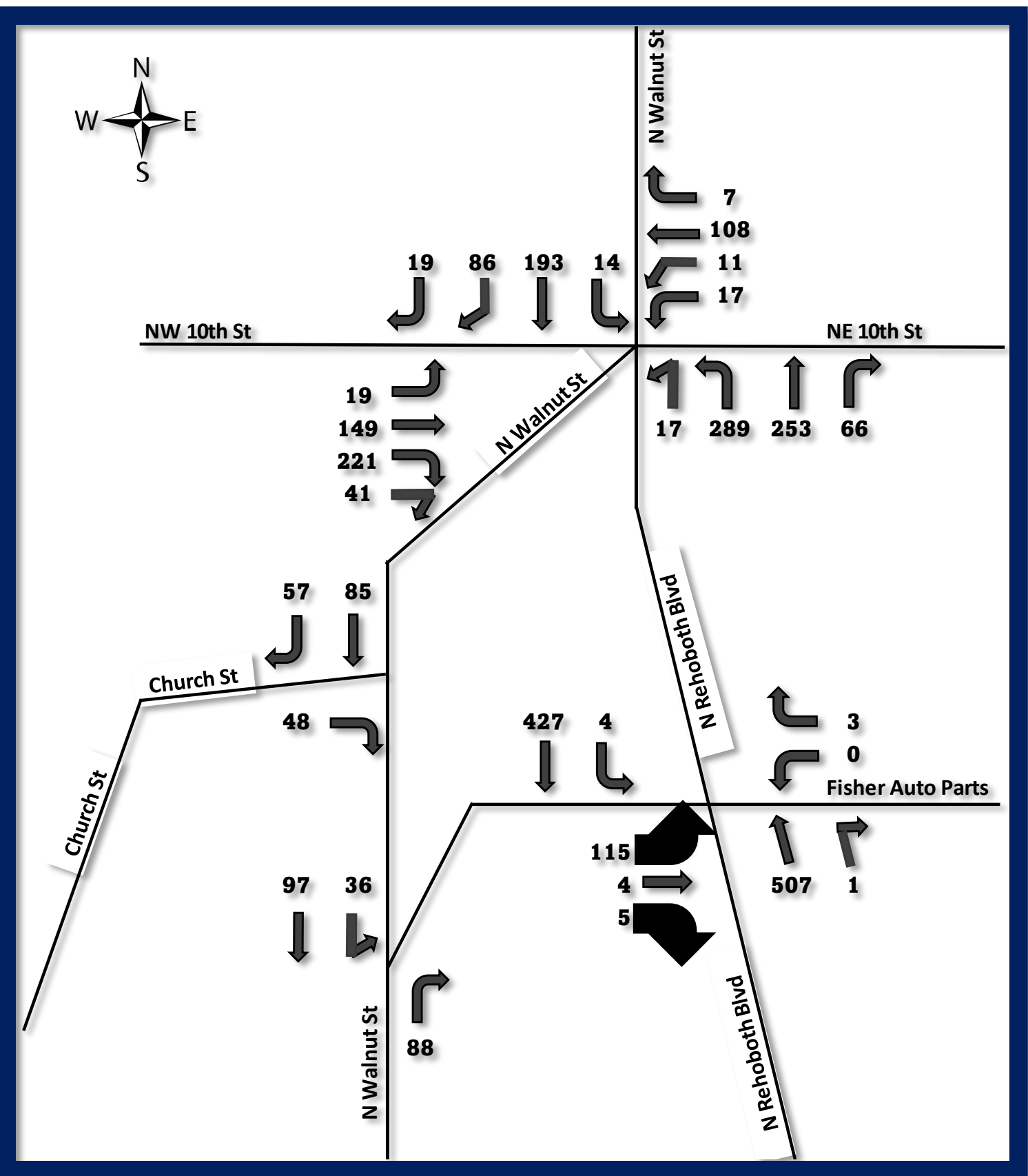
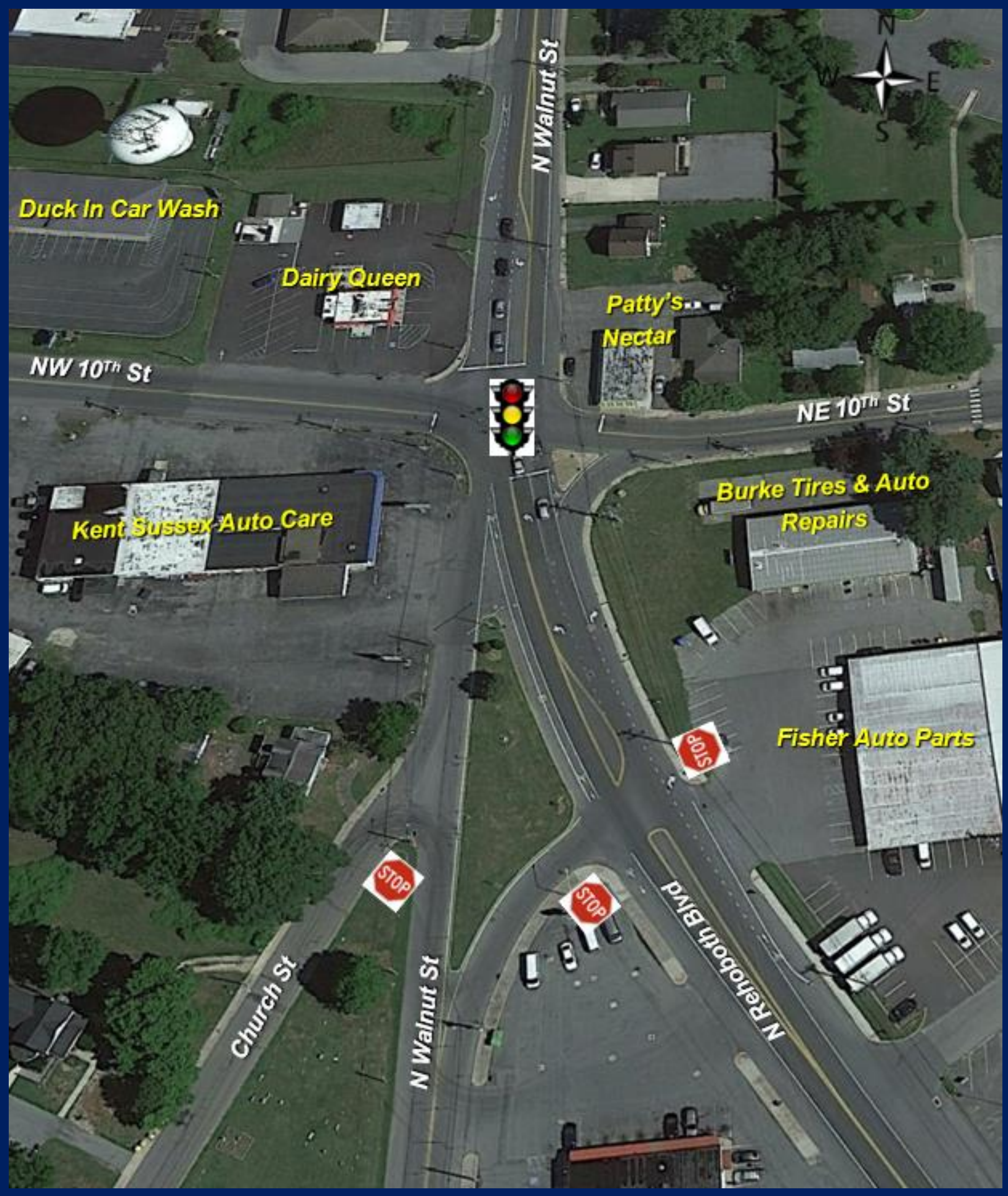
- Awkward Turning Movement



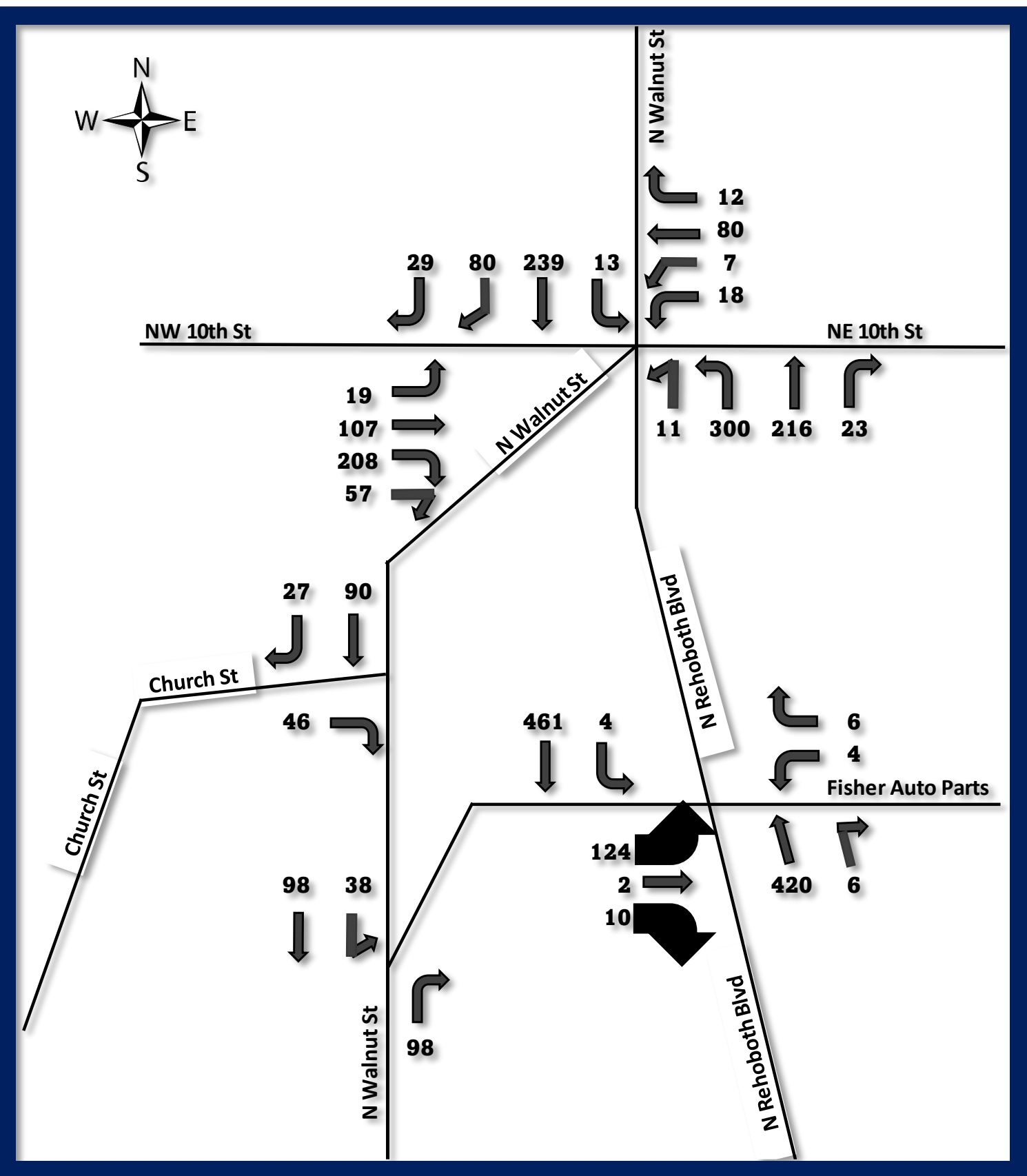
- Congestion
- Lacking Ped/Bike Infrastructure

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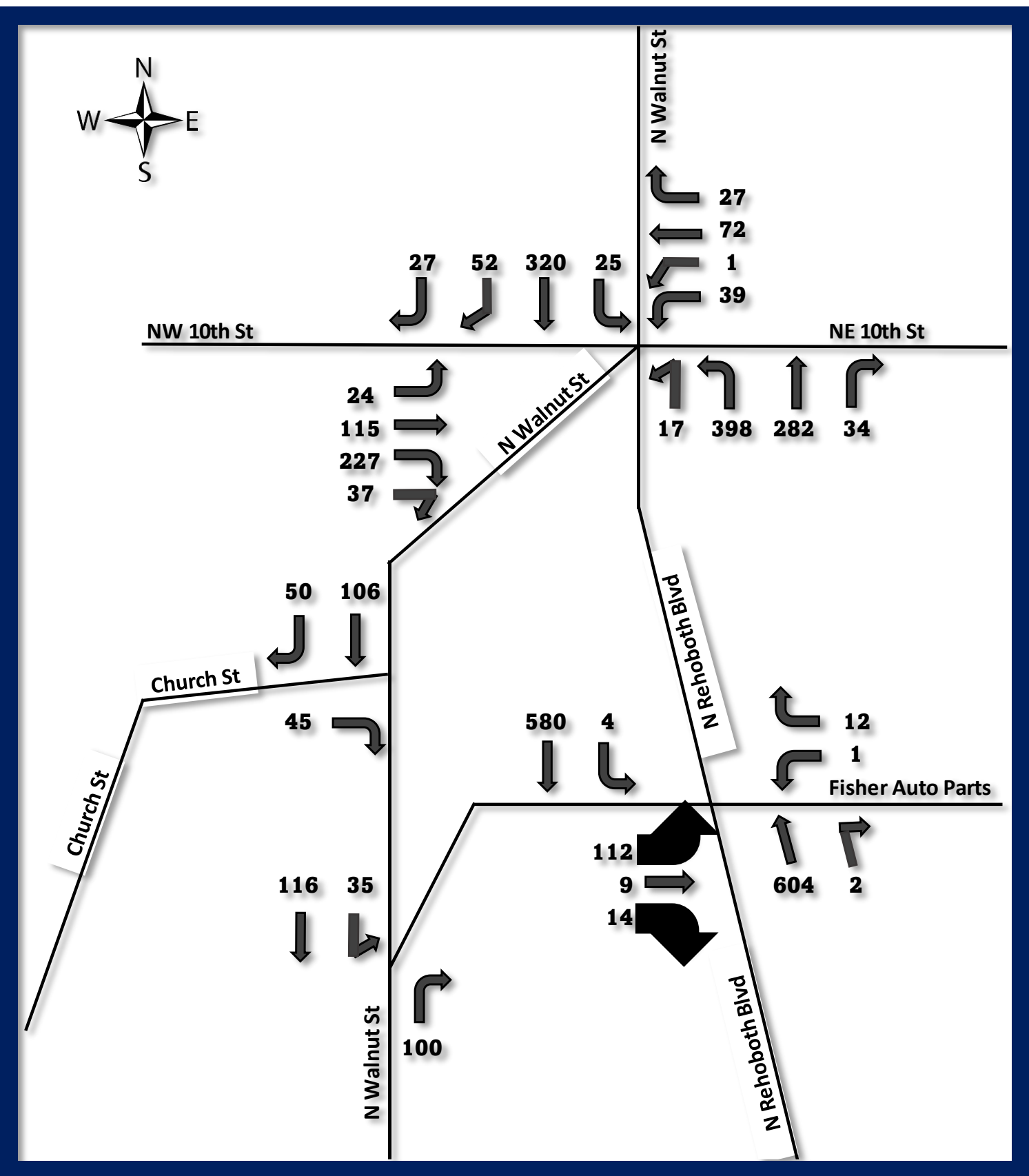
Existing Traffic Volumes



A.M. Peak



Midday Peak



P.M. Peak

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First Community Workshop

✓ December 13, 2022

- Milford Public Works Facility 6-8:00 pm
- Milford Senior High School and Milford Central Academy notified of workshop
- 17 attendees
- Comments/feedback was positive for improving this intersection
- Multiple attendees mentioned the intersection is at its worst at 2:30 when school lets out
- Key stakeholders (Meineke, Dairy Queen, and Patty's Nectars attended)

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Design year: 2050

Initial Alternatives:

1. Traditional Intersection
2. Protected Intersection
 - a) Separates vehicles from bikes/peds
 - b) Reduces/eliminates conflict points; provides clear travel paths for bikes/peds
3. Elongated Roundabout



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Alternatives Considered But Not Progressed

✓ Traditional Intersection

- Does not meet project goals

✓ Roundabout

- Single lane roundabout fails in Design Year 2050
- Requires a two-lane roundabout
- Does not meet project goals

✓ Remove Rehoboth Blvd. NB left turns using Salevan Place jug handle

- Upgrade Salevan Plan to local road standards
- Restrict left turns from N. Rehoboth Blvd onto NE 10th Street
- Conflicts with truck restrictions
- Does not meet project goals

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Modifications to Protected Intersection

- Prepared a comparison matrix for modifications:
 - a) Prohibit northbound left from Rehoboth Blvd onto NW 10th Street – LOS E (66.9 sec/vehicle)
 - b) NW 10th Street converted to one way eastbound – LOS D (40.4 seconds/vehicle)
 - c) Convert approach of Rehoboth Blvd to 10th Street to a through lane and a through/right; reconfigure southbound N. Walnut Street to one left/through/right lane to accept the new through northbound lane – LOS D (45.9 seconds/vehicle)
 - d) Convert NW 10th Street and Buccaneer St to one-way pairs LOS B (15.6 second/vehicle)

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Sensitivity Analysis

Phase the improvements

1. Immediate - Interim Improvements
2. 2037 - Protected Intersection with all improvements except one-way pairs
3. 2050 - Convert NW 10th Street and Buccaneer street to one way pairs

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Second Community Workshop

✓ January 23, 2023

- Milford Public Works Facility 6-8:00 pm
- Advertised through City of Milford and Dover/Kent MPO
- Milford Senior High School and Milford Central Academy notified of workshop
- 17 attendees
- Overall attendees were positive toward short and long-term improvements
- Mixed review on the one-way pair



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Interim Improvement



- ✓ **Project Cost: \$1.14 Million**
- ✓ **Does not inc. ROW or Design Fees**

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Protected Intersection Improvements



- ✓ **Project Cost: \$3.8 Million**
- ✓ **Does not inc. ROW or Design Fees**

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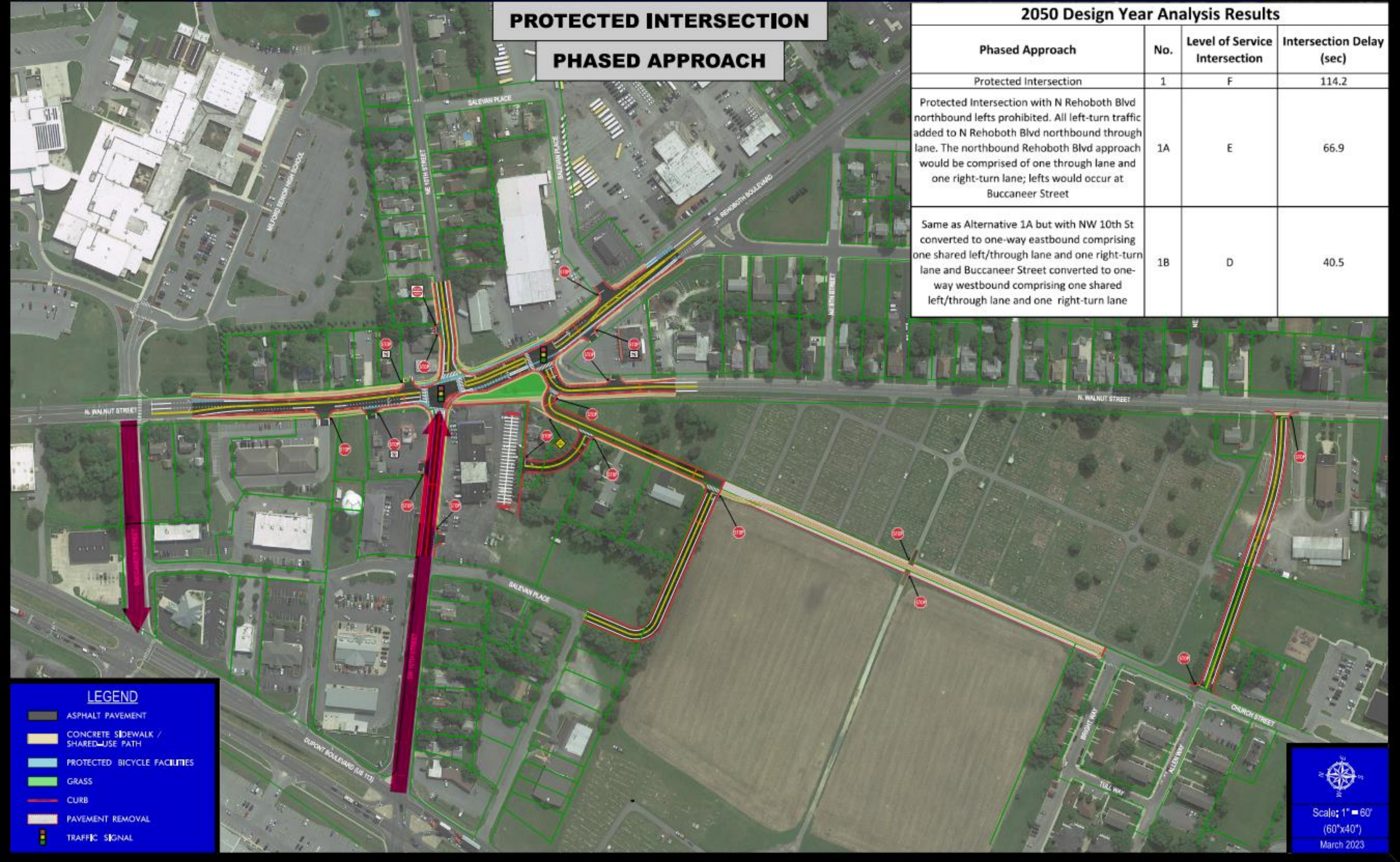
Protect Intersection Improvement - Ultimate Phase



- ✓ Project Cost: \$4.3 Million
- ✓ Does not inc. ROW or Design Fees

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Final Recommendation



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THANK YOU!

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